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A CASE OF HYSTERICAL ANURIA.

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MRS. Mc C. was first seen October 19, 1905. She was a large, strong-looking woman of thirty, and in general appearance seemed well. She was married at eighteen to a worthless man who had never been anything but a care to her, and from whom she had been separated several times. Her father is living, but her mother died at the age of fifty-six of apoplexy. There is a history of heart trouble on the mother's side. The patient has always been very nervous and high-strung. At the age of fifteen, she was assaulted at midnight, under terrifying circumstances, by a man, who, although he failed in his purpose, so thoroughly frightened her that she never got over it. A little later she had the grippe, and this disease was followed by a period of unconsciousness which lasted off and on for several weeks. During this time she recognized her mother's name and nothing else. Since this time she has had attacks of the same kind, but they have been decreasingly severe. Three years ago she had a fractured skull with bleeding from the ears, nose, and mouth. She was in bed ten weeks with this injury and was unconscious at times and had "spasms." Two years ago while riding in a street car the catch of a window falling behind her, struck her on the neck and she immediately began to have a train of symptoms which have been present off and on ever since. These symptoms have been retention of urine, oliguria, and persistent severe vomiting.

When at her worst she would have complete anuria lasting two or three days, and coincident with the anuria there would be severe vomiting, which could not be controlled. A long attack of these symptoms would reduce her to such an extent that it seemed that she could not possibly survive. She got over each attack. In June, 1904, she fractured the internal condyle of the left arm. This produced further shock and she had a period of further trouble with the urine. Coincident with the car injury, there is said to have been hematuria which lasted a year off and on. At about the same time also there is said to have been edema of the extremities and of the face. The edema has never been marked except on one occasion when it affected the face and caused it to swell considerably. She says she also had a good deal of swelling at the time the hematuria began to appear. She has had at times headaches, some palpitation, backache, and pains in both iliac regions. There is also a story of jaundice with pains in the right hypochondriac region, about two years ago, but there have been no pains in this spot since the attack. This rather eventful history ends with a curretting in September, 1905.

She has been actively ill for about seven weeks. During that time she has passed but little urine and with great effort on her part, and generally it has had to be drawn from her with a catheter. She strains, but no water comes. What is passed is highly colored, but not bloody. She seems fairly comfortable and talks about her case in a reasonable, intelligent way, without dread, and with the confidence that all will be well in a short time. She has had so many of these attacks that they do not worry her any more. Analyzing these periods of temporary complete anuria and partial suppression, it is found that she had the first attack three days after the injury in the street car two years ago. There was total anuria for three days then. At the end of this time there was a little to be obtained, about two or three ounces at a time. This condition persisted for three months and then there was a time when she passed a fair amount. There have been several relapses since then. It is noticeable that after falling and breaking her arm, there was relapse and she could not pass her water for two or three days. There seems to be no exciting cause for the last attack.

On examination, she presented the appearance of a perfectly

healthy woman, with clear complexion and smooth skin. The chest was negative. There was a large protruding abdomen which was very tense but not sensitive. Under ether, nothing was made out abdominally, and neither kidney was felt. The ureters were not remarkable vaginally. Luys' instrument was used to separate the urines, and it was seen that urine flowed from both kidneys, but in a much diminished stream. The cystoscope showed an ecchymosis or two in the bladder that might have been caused by the pressure of the instrument; otherwise the bladder was negative; both ureteral orifices were easily identified.

While the patient was under ether the urethra was dilated with the finger.

Before the ether was given, the urine was drawn with a catheter, and it was noticed that there was a great deal of resistance to the passage of the instrument. The catheterized urine was analyzed with the following result: urea, 2.02 per cent.; color, high; specific gravity, 1010; very acid; albumen, absent; sediment, very slight and consisted of a few calcic oxalate crystals, and a very few medium sized epithelial cells. There was no blood and no casts.

She stayed in the hospital only five days and then, refusing further treatment, went home. While she was in the hospital there was persistent vomiting and constant anorexia. She ate hardly anything. She was able to urinate voluntarily, however, under the influence of strong suggestion, aided, no doubt, by the thorough dilating of the urethra. The amounts of urine were never large, and once there was complete suppression for forty-eight hours. She was most carefully watched and it can be stated with certainty, that there was no chance for malingering. The vomiting was the most distressing symptom. It occurred at night especially, was large in amount, out of proportion to the quantity of food ingested, black in color, and of a decidedly urinous odor. There was some pain complained of, but it was not at all considerable, and it was not especially localized. She said that her back ached. There was no fever and the pulse remained good while she was under observation. Only on the day of discharge did she look ill. She had been vomiting all the previous night, and there was a very severe headache in the morning, the pain being on the right side of the head. For the first time also, on that morning

there was some slight edema of the feet and legs. The tongue was coated and she looked badly. She persisted in going home, however. Some urine was obtained by catheter just before she left, with this very interesting analysis: Amount, 45 ccm. (the first urine for forty-eight hours); urea, .8165 gram; sp. gr., 1.025; very acid; albumen, a very large trace; no bile; no sugar; sediment, considerable, and consists of a few crenated blood corpuscles, considerable numbers of pus cells, a few calcic oxalate crystals, a few caudate epithelial cells, very many small round cells, all granular, and a few granular and hyaline casts.

The patient was last heard from three weeks after leaving the hospital. At first there was a good deal of vomiting, but this has since subsided so that now there is very little. The amount of urine secreted daily has gradually increased and now she voids 450 ccm. on some days; when she first returned home, she sometimes secreted only 30 to 120 ccm. in four days. She still has to be catheterized and this has been necessary for two weeks or more. The urine has been carefully examined and no albumen was found, nor were there any casts or blood corpuscles in the urinary sediment.

There has also been one so-called convulsion, evidently a hysterical convulsion, during which she doubled up both hands, clasping the thumbs in the palms and became rigid all over. This was like the convulsions she had been having during the whole course of her trouble, and at no time did these spasms resemble true uremic convulsions. There has been no edema of the extremities, though the face is said to be a little swollen. Her physician says she looks well most of the time and does not present the appearance of a very sick woman.

The diagnosis of this case is open to some speculation. Either it is a case of pure hysteria with unusual manifestations, or else we have to do with some obscure renal disease of long standing. The hysterical element, however, cannot be eliminated. The retention was hysterical without any question, and this alone makes us suspicious that the whole train of symptoms is purely and simply hysterical. There is no lesion of the bladder here which might have given rise to retention, and we can absolutely rule out any spinal disease, such as locomotor ataxia, which sometimes interferes with the emptying of the bladder. The condi-

tion of the urethral muscles, one of extreme tonic contraction as evidenced by the resistance to the passage of a catheter and the chronic retention, favors the diagnosis of hysteria. The diagnosis is furthered by the yielding of the spasm to dilatation and suggestion, although there has since been a relapse.

The exciting causes of hysteria in this case are numerous. We have, in the first place, a severe mental shock at the age of fifteen, then an unhappy marriage attended with continual mental distress for a period of twelve years, grippe, followed by unconsciousness for several weeks (probably hysterical unconsciousness), fractured skull, and injury in a street car.

The various symptoms may be arranged thus:

1. Anuria and oliguria.
2. Vomiting (coincident with the suppression and in inverse proportion to it).
3. Edema.
4. Spasms and unconsciousness.
5. Bloating.
6. Fleeting pains.
7. Palpitation.

All these are well recognized symptoms of hysteria and they were all well marked in this case. What is most significant is that although she has been ill for many months, so ill that her attending physician gave her up on more than one occasion, she has the ability to rally with great rapidity and appear well at very short notice. This is most significant of hysteria, and not at all usual in persons afflicted with severe renal lesions. While she was in the hospital, although she had eaten nothing to speak of for several days previous to entering and ate hardly anything while she was there, yet she maintained an appearance of comparative health in spite of frequent vomiting. The patient was carefully watched while she was in the hospital and malingering can be ruled out.

The hematuria occurring about two years ago is difficult to explain. Here there is room for speculation. It is possible that she added the blood to the urine herself, as hysterical persons are capable of doing, although this seems hardly possible, as she was under the charge of a careful physician at the time, who would have been on the lookout for this species of deception. It is

possible also that the hemorrhage may have been hysterical and possibly have been let loose from the kidney by a tremendous spasm of the renal vessels. And, finally, it may have been the result of some renal lesion as yet undiscovered. The only reference found in literature bearing on the subject, is that of B. Guisy, (referred to later). His cases seem to have been well authenticated, but they are no more remarkable than the one under discussion. A small quantity of blood, microscopic in amount, was found in the urine after the ether examination but it might well have come from the damaged urethra, the result of divulsion. No blood was found at a subsequent examination made some days later.

The albumen found in the urine, a few days after the ether examination was transitory, as it was not found ten days later. Either it was hysterical, which seems unlikely, or else it was the result of the ether, which is much more probable. It was never found before in this case although the urine had been examined numerous times by competent physicians. Had it been due to serious renal lesion it is probable that it would have been observed before. The pus found in the urine after the ether examination may have come from the urethra. It was not enough to account for the albumen found.

The edema of the extremities and face observed throughout the course of her sickness is more probably of hysterical than of renal origin, because if renal there would have been albuminuria with it. Hysterical edema is very common.

The spasms or hysterical convulsions do not resemble uremic convulsions in any particular. They have been observed for many months, and no longer excite any alarm on the part of the patient's family. They are of short duration, do not prostrate, and are quickly recovered from.

Uremic convulsions are always of great severity and give rise to marked prostration.

Finally the fleeting pains, the palpitation, and the bloating of the abdomen are all characteristic of hysteria.

The diseases which may be considered in this case are:

1. Primary renal tuberculosis.
2. Calculus.
3. Double atrophic kidneys of congenital origin.

4. Horseshoe kidney with double ureter and disease of the isthmus (carcinoma, calculus).

5. Carcinoma.

Primary renal tuberculosis ushered in by renal hemorrhages is wholly unlikely here. The hemorrhages took place some time ago, have not recurred, and there has been no secondary vesical involvement. It is hard to imagine renal tuberculosis of two years standing, without having given rise to focal symptoms on the part of the kidney or bladder. Primary carcinoma of the kidney may be ruled out for the same reasons.

In regard to double atrophic kidneys there is something to be said. Double congenital atrophy of the kidneys has been known to occur. Morris¹ mentions a case reported by Tennent (*Glasgow Medical Journal*, Vol. XXXI.), in which the patient, aged twenty-eight, died from uremia. At the autopsy, the left kidney measured two and one-half inches in length and weighed less than one ounce; its surface was very irregular; the pelvis was a double one; the right kidney was three and one half inches in its longest diameter and weighed two and one-half ounces. Its pelvis was divided into three divisions, the upper of which was subdivided into two. The surface of this kidney was also very irregular, and the upper part was more atrophied than the lower. There was no obstruction anywhere, and the condition was looked on as one of congenital atrophy and malformation. This is the only reference given in Morris' exhaustive study of the subject. Atrophy of one kidney is commoner, and yet Morris was able to find only three cases of congenital atrophy of one kidney in 15,904 autopsies at St. Bartholomew's, Guy's, the Middlesex, and the Hospital for Sick Children. He also discredits Tennent's case, saying that it might well have been a case of unrecognized chronic interstitial nephritis.

It is evident, therefore, that the condition is a very rare one, and it is very doubtful if double atrophic congenital kidneys have ever been found. In the case under consideration, it is fair to assume that double atrophic kidneys are not present, from the fact that the patient in the intervals of her anuria passes a normal amount of urine and is in a good state of health.

Instances of horseshoe kidney are not very rare, being found

¹ Surgical Diseases of the Kidney and Ureter, London, 1901, Vol. 1, p. 69.

about once in one thousand autopsies. Morris² mentions the possibility of disease occurring in the isthmus of such a kidney and gives the case of a patient admitted to the Middlesex Hospital who died with symptoms of uremic poisoning. At the autopsy, a horseshoe kidney was found with calculous nephritis, in consequence of the impaction of a stone in each ureter. Carcinoma affecting the isthmus of such a kidney is also mentioned by Morris³ in a woman of sixty years.

Calculus is the only one of these conditions which deserves mention. The history of hemorrhage, pain in the kidneys, anuria, albuminuria, calcic oxalate in the urinary sediment, and convulsive attacks, make it open to suspicion that there may be calculus present.

On the other hand, a critical analysis of the symptoms has shown that not one of these symptoms, except that of hemorrhage, is quite characteristic. The last hemorrhage was about a year ago and there has been none since that time, nor has there been any abnormality of the urine barring the slight transitory albuminuria and the calcic oxalate in the sediment which would indicate calculous disease. Calcic oxalate is frequently found in the urine of patients who are below the normal in health and is suggestive only. What is decidedly against diagnosis of renal calculus, is the fact that the anuria is atypical of calculous anuria. The attacks of anuria in this case have been many and have covered a period of many months. Gowers⁴ in discussing the differential diagnosis of hysteria and calculous disease, says that the anuria arising from calculus usually goes on and gives rise to symptoms of uremic intoxication at the end of a week and causes death inside of three weeks, while the anuria dependent upon hysteria may last in a complete form as long as ten days without causing uremia. The repeated attacks of anuria without uremic symptoms, constitute the strongest point against calculous disease. The "spasms" which occurred are not true uremic convulsions; they have all the characteristics of hysterical seizures.

The first thing which strikes one in connection with hysterical anuria is the fact that it occurs mainly in women. Typical

² Loc. cit., p. 74.

³ Loc. cit., p. 73.

⁴ Diseases of the Nervous System, Vol. II, 2d. ed., 1893, p. 1013.

examples of the phenomenon are to be found in medical writings as far back as the sixteenth century.

In 1811 Nysten⁵ reported two supposedly genuine instances of the phenomenon, which created considerable furore until it was discovered that the first case did not belong to the category of hysteria at all, and that the second was a most flagrant deception. As reported by Nysten, this latter case was nothing less than remarkable, the anuria being associated with vomiting and with the vicarious elimination of urine through the umbilicus, ears, eyes, and nipples, and the voiding of fecal matter through the mouth. The case subsequently fell under the observation of another clinician and was brought under the sobering influence of a camisole, a form of therapeutics which immediately brought about a cessation of the entire list of extraordinary phenomena and gave rise to the discovery in the patient's bed of carefully prepared boluses of fecal matter which the crafty malingerer was about to pretend to evacuate per orem. At this the marvel crumbled and for many years, in fact nearly up to 1873, hysterical anuria was looked upon askance.

Through the clinical and chemical observations of Charcot (about 1873), anuria was again recognized as a bona fide semeiologic factor in hysteria, and our present knowledge of the subject is due largely to Charcot himself and to the researches, inspired by him, of his pupils.

Anuria may constitute either a transitory or a permanent symptom of hysteria, and it is both interesting and important to note that in the majority of cases it is accompanied by vomiting. Whether the latter causes the anuria or is caused by it is a matter not altogether easy to determine. It would appear, however, that, for the most part the vomiting is the primary phenomenon.

Curious and interesting as is this second order of anuria, with its preceding or accompanying emesis, it is not to be compared in either of these respects with a third, and far rarer order, in which the anuria stands alone, so to speak, without any discoverable vicarious accompaniments.

In the second order, in which anuria and vomiting are constantly associated, clinical investigators have naturally followed a

⁵ Nysten, *Recherches pathologiques de physiologie et de chimie*, Paris, 1811, art. iii, p. 265 *et seq.*

- line of inquiry as to whether the vomited matter did or did not essentially replace the waste products of metabolism ordinarily excreted by the kidneys.

As a result, nearly all the earlier clinicians note with emphasis a strong odor of urine to the vomitus, and practically all the moderns have succeeded in recovering from the material rejected by the stomach, a quantity of urea which varies, with notable constancy, inversely with the amount of urine voided through the natural channels.

Charcot has expressed himself as somewhat sceptical on the subject of the urinary odor of the vomitus, but the reasons for his scepticism are not altogether obvious. Certainly in the case presented in this paper an urinous odor has been detected at times in the matter vomited.

The course of events in this second order of hysterical anuria is very variable. For weeks, months, and in certain cases, years, the urine, while not completely suppressed, may be secreted in insufficient quantities, which often vary from one day to another and are governed by the vomiting or by the profuse sweating and diarrhea which may accompany or replace the vomiting. By reason of this latter phenomenon, nutrition may suffer to a marked extent and the patient lose weight appreciably.

On the other hand the secretion of the urine may at any time, without determinable cause become normal in amount, its excretion take place through the usual channels, the vomiting and other vicarious phenomena disappear and the natural order of events be otherwise restored.

We now come to the consideration of the third order of hysterical anuria, that in which this condition exists alone as a so-called *permanent* symptom, without discoverable concomitant vicarious phenomena. Here, certainly, one might reasonably look for marked uremic complications, but clinical data on this point are startling to say the least. They show that this form of anuria may persist for a period of nearly two months without producing anything more remarkable in the way of symptoms than a slight cephalalgia and an inconsiderable degree of general tremor, and that the maximum of its pernicious effects amounts to nothing worse than the same cephalalgia coupled with nausea, itching of the skin, enfeeblement of vision and dyspnea.

Owing to the marked infrequency of the occurrence of this type of hysterical anuria, it is difficult to draw any specific general conclusions with regard to it. This much we can, however, say: that the bare fact that it may exist day in and day out for a period of nearly two months without symptoms more marked or dangerous than those above enumerated, tends to shatter all our preconceived ideas on autotoxemia.

The question of an hysterical albuminuria is interesting. Gilles de la Tourette and Cathelineau,⁶ have never seen albuminuria nor have they ever found any abnormal elements in the urine of an hysterical patient not affected with renal disease. These authors studied the urine of hysterical patients and were able to observe thirty-six cases of true hysteria during an attack, meaning by this an hysterical convulsion or other severe manifestation of hysteria.

They quote Lécorché and Talamon,⁷ who looked up the subject and who think albuminuria of a transitory nature quite possible, basing their opinion on cases observed by Martin Solon and Peschier who claim to have observed transitory albuminuria at the end of hysterical attacks; they also mention Maclagan and Fiori, the latter especially claiming to have observed transitory albuminuria after hysterical convulsions. Oppenheim⁸ also mentions the possibility of albuminuria in his text-book, but gives no cases in detail.

Sugar has been found by both Oppenheim⁹ and Gibb,¹⁰ but it must be of very rare occurrence for no other reference in literature was found bearing on the subject.

Polyuria is so common in hysteria that it hardly deserves mention. It is probably due to dilatation of the renal vessels.

The excretion of urinary solids has been well studied by Gilles de la Tourette and Cathelineau.¹¹ These authors found that during the interparoxystic stage the urine was practically normal, but that during an hysterical paroxysm, the following changes in the urine are noted: (a) There is a notable diminution of

⁶ *Le Nutrition dans l'Hysterie*, Paris, 1890.

⁷ *Traité de l'Albuminurie et du Mal du Bright*. Paris, 1888, p. 285.

⁸ *Diseases of the Nervous System*. (Translated by Mayer).

⁹ Quoted by Gilles de la Tourette and Cathelineau.

¹⁰ *Loc. cit.*, p. 30.

¹¹ *Loc. cit.*, p. 99.

urinary solids. (b) The urea is reduced to about one-third the normal amount. (c) The phosphates are decreased to about one-half the normal in the twenty-four hour amount. (d) The normal proportion of the alkaline to the earthy phosphates is greatly altered: ordinarily it is in the ratio of three parts alkaline to one of earthy phosphates, but during an hysterical attack or immediately after one, it is found that the two phosphates are about equal in amount. These four characteristics are marked and are of diagnostic importance, especially the fourth; taken together they are extremely suggestive of hysteria in doubtful cases.

The only reference found relating to hysterical hematuria was that of B. Guisy.¹² He relates three cases of interest. The first was that of a female, thirty-eight years old, who after a severe mental shock suffered from trembling of the limbs, a feeling of heat in the head, pains in the lumbar regions and an abundant hematuria. With the beginning of the attacks she passed a large glassful of bloody urine, and half an hour later a half a glassful of blood, and two hours after that some more bloody urine. Then the urine became clear. A year and seven months later there was another attack of hematuria, transitory in character, and again a few months later there was still another attack of the same kind, though the amount of blood was slight. The bladder and kidneys were healthy in this case and the urine between the attacks was quite normal. There was a neurotic history in the family, one brother being insane, and the patient herself having been nervous all her life. The diagnosis of hysterical hematuria was made by exclusion. In this case we cannot help considering the possibility of beginning renal tuberculosis, ushered in by a renal hemorrhage which was repeated later; still, one would look for focal symptoms during a period of nearly two years, during which apparently there was no suspicion of either renal or vesical trouble.

The second case was that of a woman forty-nine years old. When she was twenty-seven years old, she suffered a severe mental shock, which was followed by an attack of hemoptysis, apparently without demonstrable lesion. Since the age of forty-six, any marked emotion or stress of mind is at once followed by an attack of hematuria, and sometimes hemoptysis; the former lasts

¹² *Annales des Maladies des Organes Génito-Urinaires*, 1901, p. 1460.

several hours and then disappears. During the attack she urinates every half hour. She is subject to vomiting and headaches, has always been nervous, and her family are hysterical. The bladder and kidneys are healthy and always have been. The general health also is excellent.

The third case was that of a Russian farmer of forty-eight years. After a severe mental shock twelve years previously, he immediately urinated a large amount of blood; two hours later he urinated two large glassfuls of bloody urine. Five years later, after a quarrel there was a recurrence of the hematuria, but it was of slight severity. Five years after this there was another attack which came on after the death of his only son. At this time he urinated a glass and a half of blood. He suffered habitually from trembling at the slightest provocation, was subject to melancholia, headache, but his general health was excellent. Both his kidneys and bladder were normal and always had been. The urine was negative.

Edema of more or less intensity is common enough in hysterical states. Dana¹³ mentions it and so do Church and Peterson.¹⁴ The latter say that the edema may assume a variety of forms, red, white, and blue, and that the condition may persist for many days. As to whether albuminuria may be a coexistent feature, little is said although Lépine¹⁵ asserts that this is quite possible, and relates a case of an hysterical woman, not affected with oliguria, who, between her hysterical attacks exhibited both albuminuria and anasarca, both transitory in nature. Lépine does not hesitate to ascribe the condition to hysteria and compares it to the transitory albuminuria of adolescence.

The subject of pathogenesis has not to date got beyond the realms of pure speculation, and into these realms the authors of this paper have no desire to step foot. In the matter of treatment, on the other hand, they do feel impelled to caution against instrumental interference, believing that its psychic effects are, on the whole, bad.

¹³ Text-Book of Nervous Diseases. 5th ed., 1901, p. 497.

¹⁴ Nervous and Mental Diseases. 1904, p. 596.

¹⁵ Quoted by Gilles de la Tourette and Cathelineau. Loc. cit., p. 31.

REMARKS ON TUMORS OF THE BLADDER, WITH PARTICULAR REFERENCE TO SARCOMA; AND REPORT OF A CASE OF GENERALIZATION AND SARCOMATOUS GASTRIC ULCERS.

(From the Pathological Institute of the University of Wurzburg, Germany.)

By Dr. MORITZ LOEWENHEIM.

THE knowledge of tumors of the bladder is a modern acquisition, the result of numerous pathological and experimental researches as well as the perfection of diagnostic means.

Tumors of the bladder belong to the rarer pathologic entities. According to the statistics of Küster and Gurlt, vesical neoplasms do not form 0.5 per cent. of all tumors arising in the human organism. As to the sex, investigations seem to show that they occur more frequently in the male. Antal found 179 tumors of the bladder in the male, and eighty-six in the female, while Albarran found 334 males and forty-seven females; among the cases observed by Zuelzer, twenty were men and two women.

The frequency of malignant growths, as compared to the benign tumors of the bladder, does not agree in statistics, probably because some authorities have a tendency to regard all sessile neoplasms as carcinomatous, whereas others label all pedunculated growths as benign. In his work on the surgery of the genito-urinary apparatus, Thompson reports twenty cases of bladder tumors coming under his observation from 1880 to 1884. Among these, two were supposed to have been carcinoma. Antal mentions sixteen tumors of the bladder, six of which were carcinoma, while Küster met with twelve vesical neoplasms, two of which were carcinoma. After a careful histological examination of eighty-eight new growths of the bladder, Albarran came to the conclusion that sixty-six of them were atypical epithelial tumors.

Among the benign tumors most frequently met with are papillomata. These arise in the submucosa and mucosa of the bladder and have been variously named according to the prevailing

tissue elements they contain, namely, fibroma papillare (Virchow), villous polypus (Küster), papilloma (Kramer), papilloma fimbriatum and fibropapilloma (Thompson), papilloma fibrosum (Antal).

Fibroma papillare is the classical name which has been given to the above mentioned group and represents the typical growth, in that a collection of papillary formations rests upon a more or less thick pedicle. Histologically the growth consists of a tissue framework arising from the submucous tissue and extends into the separate villi toward their periphery. It is also the bearer of an extensive vascular network from which each villus receives a branch which extends to its free extremity. The villi are covered with several layers of typically arranged epithelium. These growths frequently have a broad base or, on the other hand, they are possessed of a long pedicle and may be single or multiple. Usually, the pedicle contains one or more large vessels and occasionally muscle elements are found in it along with the fibrous tissue. These villous growths may arise anywhere in the bladder, even in a diverticulum, but this type of tumor is more apt to occur on the trigonum. As a result the ureteral or urethral orifices may become obstructed, and the same may also occur when a portion of the neoplasm becomes torn off and is caught in the urethra, thus plugging it. Smaller portions are often voided in the urine during life. On account of the considerable vascular supply of the villi, hemorrhage is frequent. During each violent contraction of the bladder hyperemia must occur in the villi on account of the resulting constriction of the base of the tumor, which together with the simultaneous mechanical action, such as pressure against the opposite wall of the bladder, explains the frequency of the loss of blood. Chronic inflammation of the bladder is also often present and may take on a malignant character, especially in those instances where there is extensive necrosis, ulceration, or even purulent degeneration of the neoplasm.

Perforation of the bladder may result from the progress of the degeneration, which, naturally, is more apt to occur in cancerous than in simple villous growths.

The papillary excrescences are sometimes short and wartlike, while at others they are jagged or threadlike. In the former case the tumor is firmer in consistency and resembles a cauliflower,

while in the latter it is very soft and tender so that the surface becomes almost semi-fluid.

Less frequent in occurrence than papillomata, are those tumors which do not give evidence of a villous structure and are always pedunculated. These are the true polypi. They are usually found at the neck of the bladder, or at the base of the organ. According to their histological structure they are divided into fibrous and mucous polypi. The former are chiefly composed of fibrous tissue, the latter of mucous tissue. On account of their firm structure and their small vascular supply and being covered with hyperplastic mucous membrane, these growths do not tend to give rise to hemorrhages as is the case with the villous type and they are more prone to occur in childhood.

Carcinoma in its various forms comes second in frequency (Küster). Primary carcinoma of the bladder mucous membrane is most difficult to clinically distinguish from that of the prostate and it certainly does occur, in spite of the contradictory assertions of Klebs. Carcinoma of the bladder arises sometimes in the form of hard or medullary nodules; at other times it appears as a diffuse flat infiltration, which may involve a large portion of the bladder. From the progress of the growth the rectum and vagina become secondarily involved. Secondary carcinoma is more frequent than the primary form, because carcinoma of the rectum, prostate, uterus and vagina very frequently invade the bladder. Metastatic carcinomatous nodules are rarely found in the bladder wall.

According to their structure one may distinguish the scirrhus, medullary and alveolar types, cancrioid and melanoma. The histological starting point is usually the epithelial layers, less frequently the glands of the mucosa. The most frequent form met with is carcinoma simplex, ordinarily termed scirrhus, in which there is an abundance of fibrous tissue elements, while the specific cell elements are less prominent. These growths may be met with in the form of marked infiltrations or hard nodular outgrowths which present ulcerations over their surface after a certain time. However, those rich in cell elements, carcinoma medullare, representing the softer forms, are by no means rare. This type is extremely malignant and shows a tendency to ulcerative degeneration at an early date. The gelatinous cancer, alveolar carcinoma,

shows a characteristic colloid degeneration of the epithelium; it is especially malignant. The cancrioid contains the typical epithelial pearls. Melanoma, the pigment cancer, is characterized by a deposit of black pigment in the cells. Another type of cancer which not infrequently arises in the bladder is what has been termed by many authorities as villous cancer. The combination of carcinoma and villi can occur in two ways; either the villi formation is primary and was originally benign, but later carcinomatous changes develop in its base and the epithelium may grow through it from below (Rokitansky, Virchow), or villi may develop around a cancerous tumor during the growth of the latter. These may be called villous cancers, but this name, which was formerly erroneously used for papillomata by Rokitansky, should be rejected because it is used too generally and inaccurately.

In rare instances the bladder may contain a few round or oval crypts which are covered with cylindrical epithelium. Their ordinary location is at that portion of the bladder near the urethra and they have the same characters as the glandular neoplasms developing in the urethra; they sometimes, however, are found near the fundus of the bladder. These structures may represent the commencement of new growths, but it is true that only very few such cases have been observed.

Cysts are more apt to be met with in the posterior bladder wall, especially in the tissues between the bladder and rectum. According to English, they generally originate from the remains of embryonal structures of the Wölffian body and Müller ducts or they may be due to cystic enlargement of the seminal vesicles and the sinus prostaticus.

Among the rare new growths in the bladder may be placed myoma. This tumor originates from the muscular structures of the organ. Histologically they consist principally of unstriated muscle fibres, a small amount of fibrous tissue and a few blood vessels. Generally they are pedunculated and very tough and it would appear that they are more frequent in the male than in the female. Generally speaking their growth is slow, but, under certain circumstances, it may take on a rapid progress. Mixed forms have been repeatedly observed, as for example, fibromyoma, myxomyoma and so forth.

Sarcoma is another comparatively rare growth of the

bladder and, although at the present time its existence is recognized, it was not long ago that it was very strongly doubted, to such an extent that Virchow and Klebs do not even mention it, while Rokitsansky limits himself to this remark: "That new tissue formation occurs in papillary growths of the mucous membrane of the neck of the bladder, especially as a fibrous tumor in the bladder wall." Birch-Hirshfeld refers to the subject as follows: "A very rare tumor termed myoma of the bladder was found combined with sarcoma elements, the growth occupying the posterior bladder wall, its pedicle being imbedded in the muscular tissue. This case was described by Gussenbauer. Ziegler refers to "sarcoma of the bladder as a rare growth." Podratzki says: "New growths of the bladder sometimes arise primarily in its walls and this is without exception as regards the benign tumors and frequently also in sarcoma and carcinoma." And further on he makes the following remark: "In women occasionally new growths project from the bladder through the urethra, which are red and fleshlike; as a rule these are sarcomata." Hueter states that myosarcoma is a very rare form of tumor. Fritsch expresses himself as follows in the *Handbuch der Gynäkologie*, edited by J. Veit: "Sarcoma of the bladder is a great rarity, contrary to all other bladder tumors, and they have been found more often in females. This, however, must be mere chance, as there have only been a very few cases recorded. The growth is usually seated in the fundus and is composed of spindle or round cells." Up to the year 1886 Küster was only able to collect five well described cases of sarcoma of the bladder, and he says: "The site of the growth appeared almost always to be in the fundus, exceptionally in the trigonum or anterior bladder wall. It is sometimes composed of spindle cells, at others of round cells. In one case metastases were found in the lung. In one instance the growth had a narrow pedicle, in two the pedicle was broad and in two there was no pedicle. This is about all that we know of sarcoma of the bladder and in the future much attention should be given to this type of growth." Guterbock states in his text book that: "Sarcoma and chondrosarcoma are rather the exception." The following statements are to be found in Zuelzer's text book: "Sarcoma has been observed in a few cases, principally in the female, in the form of a spindle cell or round cell growth; they

may be sessile or pedunculated. They are to be considered among the very rare forms of vesical growth." Ebermann writes: "Guyon found only one case and that during postmortem examination, but he refers to an article by Clado not as yet published in which twenty cases are recorded. Stein of New York has met with five instances of sarcoma of the bladder. According to the statistics given by Thompson at the Berlin Congress in 1890, out of forty-one cases of bladder tumors which were operated on, there were three instances of sarcoma. Southon gives the largest percentage of sarcoma because he found six instances out of eighteen cases of bladder growths. Out of eighty-two tumors of the bladder, Albarran only found two cases of sarcoma. Cases of sarcoma of the bladder which he collected from various sources showed that thirty occurred in males and nineteen in women. According to the conclusions drawn by this authority, sarcomata are more apt to be seated in the anterior wall of the bladder than are epitheliomata, the relation being as eighty to forty-nine. Tumors of the bladder during childhood are considered as rare. (Powers). According to Fenwick there is a certain group of multiple sarcoma which arise in polypi and are more apt to be found in children under the age of five, while there is still another group pertaining to another category, where these growths are found in adults after the age of fifty; they are seated on the posterior wall and are usually sessile, rarely pedunculated."

The above extracts taken from text books are very unsatisfactory and in many ways are quite inferior to the more definite reports given in other literature. Even the teaching of the great infrequency of primary sarcoma of the bladder should be corrected, since the publication of more recent literature on the subject.

However, before examining the more recently reported cases, some remarks about the classification of sarcoma are not out of place here. In this respect König merits the greatest credit. He distinguishes myosarcoma, round cell and spindle cell sarcoma. However, the more recent classification is more exact than König's. According to Borst, this form of growth should be divided into simple sarcomata and the highly developed sarcomata. In the former, Borst includes the round cell and spindle cell sarcoma and the star cell and reticular cell sarcoma, while

in the more highly developed types he includes fibro-sarcoma, lympho-sarcoma, myosarcoma, myxosarcoma and chondrosarcoma.

The former types of sarcoma are derived from an excessive growth which finally results in a secondary filling up with embryonal cell elements. The character of the original tissue from which the growth sprung was entirely different from the tumor and there was tissue which did not show the least resemblance to the structure of the original tumor formation forming the base. The second group of sarcoma shows manifestations of a slight degree of degeneration, evincing unmistakable relationship to the various tissue types of normal tissue growth, typical growths coming from various adult tissue structures.

Having made these preliminary remarks relative to the classification and histology of vesical growths, I would now briefly consider the cases recorded in literature and then describe a case which I examined at the Pathological Institute of the University of Wurzburg.

The first case of bladder sarcoma is recorded by von Senftleben in 1854 in the *Archiv für klinische Chirurgie*. The patient, a female, was twenty-nine years of age. A large soft tumor was situated on the right side at the fundus of the bladder, below and near to the ureteral orifice. It had penetrated outwardly through the urethra by means of pedunculated offshoots and was extirpated per urethram. Death followed from peritonitis due to perforation of the bladder. Microscopical examination showed that the tumor was a spindle cell sarcoma. The second case is reported from the Greifswald Clinic by Siewert. The tumor, which was a round and spindle cell sarcoma, was found in the anterior wall of the bladder and had been made to extrude through the urethra by the contractions of the organ; this caused dilatation of the urethra and the growth extended and grew into the vagina, dilating the latter to such an extent that even the os-uteri was dilated. There was gangrenous degeneration in some portions of the growth, purulent cystitis, atresia of the left ureter with hydro-nephrosis, pyelonephritis and purulent peritonitis. Death.

Another case is reported by König, who in 1872 operated on a man presenting a pedunculated round cell sarcoma the size of a hen's egg, seated at the entrance of the bladder. Marchand

has also reported the case of a round cell sarcoma in a female fifty-seven years of age, in the *Archiv für klinische Chirurgie* in 1878. In 1883 Sperling found thirteen instances of sarcoma out of 120 neoplasms of the bladder; eight of these occurred in the female, three in the male, while in two the necessary information was lacking. As to age there were two female children, one twenty-two months and the other four years of age, six occurred in women between the ages of twenty-nine and fifty-seven years, and the three men varied in age from twenty-one to seventy-three years. Histologically three were spindle cell sarcomas, five were round cell sarcomas, two were mixed cell sarcomas and three fibrosarcomas.

During the following years, up to 1890, about twenty-four more cases were reported and which were collected by Hintersoisser. This authority found that they were described as large, broad, or pedunculated tumors, frequently completely filling the bladder; others were also described as diffuse infiltrations and thickenings of the bladder wall. He also found that the starting point in the majority of cases was in the submucosa and not infrequently in the muscular layer. The surface of the growth was usually described as being ulcerated, rather than covered with normal mucous membrane. The occurrence of metastases was rarely noted. From this summing up it may be assumed that sarcoma of the bladder is relatively frequent in childhood, as well as in adults, usually in the sixth decade of life and that it is by no means more frequent in the female as has usually been thought, because out of forty cases which this authority collected in literature only fifteen occurred in women.

In the same year a case of small round cell sarcoma was published by Bernstein. A round, hard, nodular tumor, with an ulcerated surface was found on the anterior bladder wall. In 1893 Frölich reported an instance of spindle cell sarcoma which had partially undergone fatty changes, while in 1894 Steinmetz recorded a case of mixed cell sarcoma occurring in a boy two years and three months of age, and he also collected thirteen other cases of sarcoma of the bladder occurring in childhood. Clado records this case and one of his own in his work entitled "*Traité des Tumeurs de la Vessie*." In the years following up to 1900 four more cases were published and which were collected

by Jäger in his thesis which was published at the beginning of 1904. He was able to collect eighty cases from the literature and adds another of his own which was a round cell sarcoma. Part of the cases recorded by Jäger have already been referred to in some of the above mentioned articles, but Jäger emphasizes, and justly so, that sarcoma of the bladder is not as rare as the representative text books would lead one to believe. Among the eighty cases which he collected, forty-six occurred in men and twenty-six in women, while in eight there was no definite information regarding the sex. Histologically round cell sarcoma appears to be the most frequent, because he found thirty-five instances of round cell sarcoma, thirteen spindle cell sarcoma, twelve cases which were merely called sarcoma, five fibrosarcomas, five mixed cell sarcomas, four myosarcomas, one alveolar spindle cell sarcoma, two chondrosarcomas, one teleangiectatic sarcoma, one lymphosarcoma with spindle and round cells and one small cell sarcoma.

Three more cases have more recently been reported from the Pathological Institute at Innsbruck in the Seventh Number of the *Zeitschrift für Heilkunde*, July, 1904. It is especially noteworthy in these cases that macroscopically the probable diagnosis was carcinoma, while microscopically the growths proved to be sarcomata. The first was a small round cell sarcoma of a partially alveolar structure situated in the region of the posterior bladder wall on the right in a female sixty-two years of age, with secondary diffuse growths in the vagina, the latter being closed by the hymen. Kroph makes the following remarks relative to this case: "What was especially noticeable and of great importance relative to the nature and development of this tumor, were the foci found at many places in the bladder and which were characteristic, in as much as they contained products of hyalin changes, and also on account of the retained clusters of red blood corpuscles, as well as the presence of eosinophiles showing their relationship to the blood vessels and incidentally to the lymphatics surrounded by the blood vessels. Here and there this relationship was verified by the presence of a sharply outlined stroma which surrounded the cell clusters. The lymph spaces and lymph vessels supplied with endothelium were found to serve as passages for the growth and its extension in the muscular layer of the bladder and in the perivesicular and fatty tissue, as well as in the

submucosa under the intact mucous membrane of the bladder. In this way, probably, infiltration of the bladder by the growth arose, which was especially easy on account of the numerous lymphatics in the vagina."

The second case represented a giant cell sarcoma of the fundus and top of the bladder in a male forty-eight years of age, with extreme gangrenous degeneration, resulting in peritonitis from perforation. The third case was an endothelial angiosarcoma around the trigonum of the bladder in a male sixty-four years of age. The metastatic nodules in the heart, suprarenal bodies and subcutaneous fat of the upper arm are of interest.

I will now give a detailed history of the case which came under my observation, for the notes of which I am greatly indebted to the kindness of Professor Dr. Borst.

The patient, a workman, entered the Julius Hospital at Würzburg on December 5, 1903. Both parents are dead, but brothers and sisters well. In 1880 the patient contracted gonorrhea, which was superficially treated. Three years ago the first symptoms appeared, represented by difficulty and frequency of micturition requiring more pressure than customary before the urine could be voided. The jet was intermittent. For the past few weeks micturition had become still more difficult. Four weeks ago he complained of pressure pain in the renal region and his face became puffy. For the last few days the patient has not been able to pass his urine. Catheterization was tried, but was unsuccessful, so that puncture of the bladder was resorted to. He was pale, but fairly well nourished. In the lower half of the abdomen a semi-circular tumor in the middle line could be detected, which was sharply defined from the surrounding structures and represented the distended bladder which reached to the umbilicus. By the rectum the prostate could be felt, quite as hard as a stone and so much enlarged that its upper borders could not be distinctly felt. On its sides a narrow strip of normal tissue could be felt between the gland and the bony pelvic walls.

December 21. Patient was catheterized twice successfully. Much foul pus was withdrawn. In the evening there was a rise in temperature. Therefore, several days later external urethrotomy was done by Professor Schönborn. After opening the urethra a partially necrotic tissue of hard consistency was

found near the prostate and was removed in large pieces. A permanent catheter was inserted.

After the operation the temperature remained down for a while, but at the beginning of February it again rose. Urine was passed by the perineal fistula. Soon after a perforation through the anterior wall of the rectum was found and at the same time a deeply seated pocket of pus was detected extending on each side towards the region of the tubera ossis ischii. In order to obtain a more simple condition of the wound a larger opening was made and it was then found that the entire pelvic tissue between the bladder and rectum, as well as on the sides, and probably also part of the posterior aspect of the bladder, was markedly infiltrated and undergoing purulent degeneration. There was a large cavity into which the rectum and bladder opened and the urethra could not be seen. Posteriorly the walls of this cavity were formed by the posterior walls of the rectum, while in front, behind and on the sides was composed of neoplastic tissue. The condition looked very badly and the temperature rose in the evening.

Although locally there was not much apparent change, the general condition of the patient became worse. He gradually lost his appetite completely, became very anemic and suffered from chills and sweating. He died on February 16, 1904, in an extreme condition of cachexia.

The clinical diagnosis was malignant tumor of the bladder and prostate; gangrenous degeneration, pyelonephritis, sepsis and cachexia.

Postmortem performed on the following day gave the following results. Both lungs were much dilated; the left one being completely dilated and the right one at its upper portions was adherent. A cicatrix at the apex of the right lung was found and there was great edema of both organs.

The cardiac walls were completely adherent and in the adherent layers of the pericardium many grayish colored nodules were found. The heart was enlarged, especially on the right, the right ventricle being dilated. Heart muscle very soft. There was a fatty growth on the right. The right auricle was also enormously dilated. The anterior wall of the right ventricle was almost as thin as paper, while the heart muscle of the left ven-

tricle was cloudy and light brown in color. One of the aortic valves was sclerotic at its point of attachment.

On the perineum was seen an old cicatrix with gangrenous walls. A fold of peritoneum was found extending downwards toward a patent inguinal canal and bended sharply downwards towards the process at this point. The vermiform appendix very long, its distal third offered a cystic dilatation but was free from adhesions.

The testicles, scrotum and spermatic cord presented nothing of note excepting some dilatation of the veins. The lymphnodes running along the iliac vessels and aorta were enlarged, soft and vascular.

After the urethra had been split open the abscess cavity already alluded to was reached at about twelve cm. behind the external orifice. The remainder of the urethra was wanting. A portion of the vesical neck was distorted and the trigonum infiltrated with a tumor formation. The walls of the bladder, excepting a portion of the fundus, were filled with several thick, whitish neoplastic masses. The posterior wall of the rectum laid free in the abscess cavity.

The prostate was included in the neoplastic mass, but nevertheless by far the greater part of the growth belonged to the bladder walls. The perivesical pelvic tissue was infiltrated.

The spleen was soft, flabby and pale. The kidneys were decapsulated with difficulty. The left kidney was large, its cortex pale and pelvis somewhat dilated; it contained a few soft nodules. The entire left suprarenal body was included in a vascular neoplastic mass. The right kidney, as well as the left, contained metastases; the right suprarenal body had become converted into a neoplasm the size of a child's fist, fairly firm in consistency, and partially yellow, partially dark red in color. By way of the suprarenal vein neoplastic masses had reached the vena cava and protruded into its lumen. The stomach was considerably dilated. On the greater curvature were three necrotic ulcers, with infiltrated edges. There were no clots in the pelvic arteries nor iliac veins. Both ureters were patent.

The anatomical diagnosis was: emphysema and pulmonary edema. Bilateral adhesive pleuritis. Old cicatrices of tuber-

culosis in the right apex. Tuberculous adhesive pericarditis. Dilatation of the heart with atrophy and fatty degeneration of the muscle. Hydrops of the vermiform appendix. Right inguinal hernia. A carcinomatous or sarcomatous neoplasm of the vesical neck and prostate (?). Perforation of the walls of the bladder and rectum. Chronic cystitis. Metastases in the lymphatics of the iliac region and retroperitoneal space. Metastatic (?) growths in the kidneys and suprarenal bodies. Thrombi of the right suprarenal vein. Hemorrhagic erosions of the stomach with three ulcers (metastatic ?).

Microscopic examination was made of the bladder walls, the surrounding retroperitoneal tissue, kidneys and suprarenal bodies, and particularly of the gastric ulcers, because it was of special interest to ascertain whether or not one was dealing with metastatic ulcerating sarcoma or simply ordinary gastric ulcers; macroscopically these ulcers looked like the simple gastric ulcers; they were perfectly flat and did not extend deeper than the submucosa, while their borders were only slightly infiltrated. A cross section of the bladder wall showed that the growth was an infiltrating vascular round celled sarcoma with marked tendency toward degeneration. The cells were moderately large and were generally rounded or oval and contained somewhat vesicular nuclei. Infiltration of the bladder with round cells was very diffuse and in many places the tissue fibres and muscle-fibres were isolated from each other by the interposition of the sarcomatous cells.

Thrombi were frequently found in the vessels in combination with necrosis of the neoplastic tissues. There were profuse hemorrhages in the growth, the cause of these being due to the fact that the sarcoma cells were more prone to develop along the vessels and penetrated through their walls, rupturing into their lumen. Many small veins had ruptured into the tumor mass in this way. There were inflammatory processes in the bladder walls along with the tumor formation. Especially to be noted were clusters of leucocytes and fibrinous exudates. The neoplasm had invaded all the structures of the bladder wall, but at many points the inner surface was more particularly involved. At those points where the growth extended through the bladder into the pelvic tissue, many large veins were seen surrounded by sarcoma cells and many of these vessels contained neoplastic thrombi.

Occasionally at these points the masses of the growth had spread into the intima of the larger veins and had led to a thickening of the latter to the extent of about ten times its normal thickness. The vessel lumen, impaired by the sarcomatous growth in the intima, was frequently only separated from the sarcoma masses by the endothelium. At those points where the mucous membrane and submucosa of the bladder had become totally infiltrated, necrotic degeneration occurred with the formation of thrombi; at some points the entire mucous membrane and submucosa were necrotic and enormous masses of bacteria had gathered around these necrotic parts. The severe inflammatory process which in this case accompanied the sarcomatous growth was probably due to the points of necrosis and ulceration on the internal surface of the bladder. In several sections taken from points where the infiltration had made only a slight progress, showed that here the tumor had spread in the mucosa and submucosa without involving the muscular structures, so that, on the whole, as has already been mentioned, the bladder growth had probably extended from within outwards.

The metastases in the kidney showed clearly that they came by way of the vascular system of the kidney, especially the capillaries, from the bladder. The first evidences of the sarcomatous growth occurred along the network of capillaries in the renal cortex, while secondarily there was penetration into the lumen of the urinary canals, resulting in their destruction. Evidences which might have distinctly demonstrated that the sarcomatous growth arose from the glomeruli were not found and the glomeruli were, as a rule, secondarily surrounded and destroyed by the malignant invasion. The renal metastases also showed the presence of an inflammatory process, and, like the primary growth, gave evidence of profuse hemorrhages and necrosis, as well as the same tendency of the tumor cells to extend along the veins and to grow into the lumen of the vessels.

The metastases in the suprarenal bodies and retroperitoneal tissue around these bodies exactly resembled the original growth. The neoplasm invaded the retroperitoneal tissue, this being accompanied with great dilatation of the vessels, especially the veins; many of these showed the same sarcomatous cell layer around them and in many points the walls of the veins were

penetrated by the cells, while extensive hemorrhagic foci complicated the histological picture. The suprarenal bodies were practically transformed into a malignant tumor and at many points they were considerably broken down by hemorrhages and necrosis.

The gastric ulcers were of great interest and microscopically showed a decided sarcomatous character. The mucosa and submucosa were diffusely infiltrated with sarcoma masses which had also involved the muscular layer of the stomach. The proliferation of the sarcoma in the gastric mucous membrane occurred in the interstitial tissue between the glands, the latter becoming secondarily destroyed. There was also chronic gastritis with interstitial cell infiltration and glandular hyperplasia of the gastric mucosa. Many small vessels, especially the veins of the submucosa and muscularis, were filled with sarcoma cells.

All things taken into consideration this was a large round celled sarcoma which was characteristic, not only on account of its enormous local extension, but on account of its numerous metastatic ulcers, which were particularly interesting as far as their localization was concerned. The growth was also interesting on account of its intensely infiltrating tendency and its extension along the vessels, especially the veins, and its penetration into their lumen. From this fact the pathologic diagnosis of angiosarcoma was decided upon. The invasion of the vascular system by the growth not only led to profuse hemorrhages, but also to thrombi and combined with these, there was ischaemic necrosis in the tumor tissue. The relation of the neoplastic cells to the vessels and their penetration into the lumen of the latter, accounts for the secondary growths in the distant organs. Since the lungs were free from metastases and since, on the other hand, there was no patent foramen ovale, it is consequently most plausible to attribute the renal and suprarenal metastases, as well as those in the stomach, to venous, rather than to arterial emboli. From the localization of the primary growth, as well as the large veins and portal system being affected by the growth (the rectum was very considerably destroyed), therefore, extension of the tumor cells by way of recurrent blood streams in the above mentioned vessels may be accepted as probable. At all events arterial emboli were not so likely, because were this the case it would have

to be assumed that the neoplastic cells had passed through the pulmonary system, especially the pulmonary capillaries, without becoming deposited and producing metastases.

Considering the relations of the local extension of the tumor, the mother tissue of the neoplasm must have started in the bladder, probably in the mucous membrane or the submucosa. The report of this case is consequently justified, not only on account of the infrequency of vesical neoplasms in general, but also on account of the metastases from venous emboli, which resulted in the formation of multiple gastric ulcers, microscopically proven to be of a true sarcomatous nature, thus rendering the case of extreme pathologic and clinical interest.

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NEPHROPTOSIS FROM THE GASTRO-ENTEROLOGICAL VIEW POINT.

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IT is an unfortunate, but well recognized fact, that our profession often suffers from "operative mania" in certain special directions and frequently, I fear, to the detriment of our patients. Among such notable attacks, the fad of ovariectomy, some few years ago, was carried to an extreme, and I believe you will agree with me in the statement that many women were thus unnecessarily "unsexed." I can well remember that a well-known gynecologist, having thus operated for certain nervous conditions in a number of cases, was therefore desirous of so treating one of my patients. I merely asked him if the operation of "castration," for a similar train of nervous symptoms, would be popular with our own sex, and if he would himself be willing to submit to this operation for a similar condition. Needless to say no operation was performed, and my patient made a perfect recovery and is still the happy possessor of her organs. Since that time, however, there has been, unfortunately, a decided "coolness" when I approached my professional friend.

At the present time, it seems to me, there is among us the same "operative mania" for nephroptosis, and I do not hesitate to say that I have frequently seen nephropexy performed in many cases where there was absolutely no scientific basis for the operation whatever. Time precludes my describing the various degrees of nephroptosis, which are familiar to you all, and I shall simply generalize in this paper.

Prolapse of the kidney occurs at least six or seven times more frequently among women than with men. You are well aware that, on account of the position of the liver, the right kidney lies lower than the left, and nephroptosis occurs more frequently on the right side than on the left. It may occur with both kidneys, however. Prolapse of the kidney is *acquired*, while floating kidney is congenital.

Nephroptosis is said to exist in about one out of every seven women. Edebohls finds it in about 20 per cent. of his cases, while

some even state that this condition exists in fully 33 per cent. of all women examined. The advocates of promiscuous nephropexy state that even slight mobility of the kidney will cause severe reflex disturbances.

At this point let me call to your attention that the "*normal kidney is movable*," and on abdominal section it can even be observed moving in harmony with inspiration and expiration.

Let us consider for a moment the various symptoms imputed to movable kidney by numerous authors.

A. H. Cordier, in the *American Journal of Obstetrics*, Vol. XXIV, 1896, speaks as follows:

1. A movable kidney often produces a dilated stomach, with all the accompanying symptoms of disease of the latter.
2. It is a fruitful source of gall stones, by the pedicle producing a partial obstruction of the common duct.
3. The bending of the ureter often gives rise to hydro-nephrosis.
4. It may produce death by complete strangulation, by a torsion of the vessels and ureter.
5. By dragging on the abdominal aorta and kinking of the vena cava, a condition simulating an aneurism of the vessels may be produced.

Jaundice and catarrh of the gall bladder have been attributed to nephroptosis.

Dr. J. Cameron Anderson, now of New York, in an article entitled, "Bilateral Nephropexy and Operation for Chronic Appendicitis Through Right Lumbar Incision," *Western Medical Review*, Lincoln, Nebraska, July, 1900, imputes renal calculus, hydronephrosis and chronic nephritis to nephroptosis.

He believes that movable kidney may produce reflex disturbances of the generative organs, especially during the menstrual period, but that it cannot "*per se*" produce a diseased condition of these organs.

Edebohls states that movable right kidney produces chronic appendicitis in 20 per cent. of all women with nephroptosis of the right kidney, due to congestion resulting from compression of the superior mesenteric vein against the head of the pancreas and spinal vertebræ.

He furthermore attributes numerous stomachic disturbances

to nephroptosis, such as dyspepsia, flatulence, pains sharp and lancinating in character, apparently in the intestines, nausea, vomiting, and anorexia, pain referred to the cardiac extremity of the stomach. He explains these symptoms by traction and pressure upon the duodenum, causing a narrowing of its lumen and resulting in a residuum in the stomach undergoing fermentation, also by the renal plexus being so closely associated with the solar plexus, which receives terminal filaments of the right pneumogastric nerve. Pressure on the common duct has caused jaundice. Nervousness and restlessness result, and the patients sleep poorly, lose weight rapidly, and headache, backache, a dragging sensation in the loin, radiating to the pelvis, are sometimes present, often simulating uterine flexions, versions, or displaced ovary.

All these symptoms yield quite readily to fixation.

Pregnancy, tumors of the uterus, ovarian cysts and tumors of the lower abdomen, as soon as they attain any size, cause a cessation of the most severe symptoms by gradually pushing and holding the kidney in its normal site.

In the last statement we have a most important admission, for one of the chief factors in maintaining the kidneys in their normal position, and the continuance of normal intra-abdominal pressure on these organs, is the maintenance of the normal position of the intestines, and I shall shortly endeavor to demonstrate that enteroptosis, in a large percentage of cases, has a direct bearing on the resulting prolapse of the kidneys.

In the *Medical Brief*, December, 1903, Dr. Augustin Goelet gives, as the consequences of neglected prolapse of the kidney, the following:

1. The patient may be reduced to a state of chronic invalidism as a result of the symptoms produced by the prolapse, or the condition depending upon it.

2. Many diseases of the female pelvic organs are caused, or maintained by a prolapse of the kidney, by pressure upon the ovarian veins, interfering with the return circulation from the pelvis.

3. In 75 per cent. of all the cases of prolapse that have progressed to the third degree, or beyond, there is a pyelo-nephritis or interstitial nephritis, as shown by careful microscopical examination of the urine.

4. Hydronephrosis, pyo-nephrosis, or atrophy of the kidney, may and does occur in a certain number of these cases.

5. Fixation of the kidney in abnormal position may result from perinephritic inflammation, provoked by irritation of the organ, or interference with its circulation.

Attempts at correction of this condition, by the use of belts or corsets, cause irritation and inflammation of the kidney, owing to the pressure necessary to support it. They may be of value in the earlier degrees of prolapse, or what might be designated movable kidney, before the organ has descended below the level of the ribs in front, to retard the progress of the descent, but later they are not only of no value, but are positively injurious. Therefore fixation in its normal position, by operation, is the only reliable means for overcoming this condition, and the operation should be resorted to early, before the health of the patient is seriously impaired, or the kidney is disabled. Dr. Gill, Wylie and others hold similar views to the above authors, but time prevents my discussing them.

Since, according to these authors, from 20 to 33 per cent. of women suffer from nephroptosis, the outlook is a sad one for our present generation, though *certainly satisfactory* from a *surgical viewpoint*. On the other hand, my friend, Dr. Achilles Rose, in an interesting article entitled, "Floating Kidney Idolatry—A Polemic," quotes from an article by Alexander Macgregor in the *Lancet* of December 14, 1901, entitled, "Movable or Floating Kidney a Cause of Acute and Chronic Painful Dyspepsia, Etc." "The cause of dyspepsia in some cases is not the stomach itself, but the symptoms are due to the wanderings of a floating kidney. The kidney is not really thought of as being the cause of an acute attack of jaundice, etc., yet it has been known to give rise to such symptoms." Dr. Rose hereupon remarks that "Schleiden has shown that some natural philosophers have accused the moon of influence on events in nature of which she is innocent, and compares the rôle the moon is made to play with the rôle of the cat accused of having broken dishes, while the kitchen maid is the malefactress. This applies to the rôle the floating kidney is made to play in regard to gastric and nervous symptoms.

"Studying the history of medicine, or the history of religion, we see nothing is too paradoxical to find believers, at least for a

time. The importance which at present is attributed to floating kidney is one of those aberrations of men of science, of which we find examples enough in history. It is surprising to observe how much learning has sometimes been employed by serious men to support a theory which appears in a later period to be entirely unscientific."

Macgregor describes a number of cases in which one or both kidneys were movable, and in which the abdominal walls were flaccid. He remarks, "Nothing abnormal was detected in the stomach. We do not know whether the gastric contents were examined, the condition of the motor function, or whether or not gastroptosis existed."

Let me say right here that *careful investigation on my part* reveals the *astounding fact* that in *none of the papers* written by the *ardent advocates of nephropexy* can I find the *least evidence of investigation* into these *important data*. The kidney was designated *at once* as the "*casus belli*," and operated upon in consequence.

Furthermore, Kraft-Ebing warns us against overestimating the importance of the floating kidney so often found in emaciated neurasthenic pluriparæ. He says, in many instances, this floating kidney only becomes of importance when the attention of patients has been directed to it and when their minds become occupied with this wandering organ. He has adopted the principle, not to reveal to the patient the condition and in case he has been informed of it by some other physician, to make little of it and to inform the patient they will have to eat well to reduce the ptosis.

Bazet, in the *Transactions of the Medical Society of the State of California*, 1898, says: "There are patients,—they are mostly women,—in whom the floating kidney is but a part of a complex condition, where enteroptosis and neurasthenia appear to play the principal rôle. Here all the viscera are altered in their suspension, and these patients are nervous in the proper meaning of the word. When in such cases nephropexy is performed, there is absolutely no therapeutic benefit.

James Israel, of Berlin, at the International Congress in Moscow, in 1897, said: "Careful observation made on a great number of cases has convinced me that the operation of nephropexy is often superfluous and irrational, because the many symptoms which are attributed to movable kidney,—a very common occur-

rence,—are, in only a *very small number of cases*, really related to this displacement; these symptoms are caused mostly by enteroptosis, or neurasthenia, or affections of the generative system." He speaks against popularization of this affection, because many women who have heard of floating kidney and all the *ghost stories* about them, keep these horrors in their minds and have no peace until they are operated on.

Dr. Rose furthermore says: "Edebohls and his apostles find a movable kidney in almost every woman that presents herself for examination. He and his followers have perfected the method of examination to such a fine point that hardly any woman can escape being accused of having one or two movable kidneys if she happens to go to these virtuosos. A list of symptoms which includes the whole clinic of internal medicine was attributed to movable kidney. I saw a number of women at a medical meeting on whom demonstrations of movable kidney had been given and when they passed the stand to be let out, they reminded me of the Roman gladiator's *Morituri te salutamus*."

Modern diagnostic technique has discovered what the "Gods formerly had covered with night's shadows."

I desire you to keep continually before your mind the *two chief factors* which support the kidneys in their normal position.

First—the fatty capsule (perirenal fat).

Second—and of equal, if not of greater importance, the pressure exerted by the intestines with their suspensory ligaments and omental covering.

My investigations have been carried on, for the past fifteen months, at the Manhattan State Hospitals, Wards Island, where there are over 4000 patients—male and female—equally divided. Special research has been conducted at my Tuesday clinics at the West Hospital. Furthermore, I have examined many patients at St. Bartholomew's Clinic and in my private practice. Some of the results were reported by me in a paper entitled "Observations on Dilatation of the Stomach and on Gastropotosis," read at the Academy of Medicine, March 14, 1904, before the Medical Association of the Greater City of New York. The gynecological conditions were investigated by Dr. LeRoy Broun, who visits the West Hospital in that special department. *In no case could any connection be found between the prolapsed kidney and the genital*

organs, as regards the production of disturbances—or inflammatory conditions. Thorough examinations of the genito-urinary tract and of the urine were made by Drs. Ferd. Valentine and Terry M. Townsend, and in *no case* was there evidence either of *nephritis*, or *pyelo-nephritis*, although nephroptosis of the third degree, or more, existed in these cases. They examined twenty cases or more in person, and I have tested numerous other cases with a similar result. This would seem to dispose of the statement that seventy-five per cent. of all cases of nephroptosis of the third degree give evidences of nephritis, or of pyelo-nephritis.

I have seen, however, in the course of my experience, nephritis or pyelo-nephritis, resulting from nephroptosis. Nephropexy would certainly be indicated in these conditions and in hydro-nephrosis. Fixation of the kidney from perinephritic inflammation is a rare condition, as are the dangers of death from torsion of the ureter, or kinking of the vena cava.

Strain, or traumatism may cause prolapse of the kidney and when local inflammation is demonstrated by urinary changes, or pain, or tenderness occur, operation is again indicated. Males are more subject to such injury, on account of occupation, but such cases are not very numerous.

Tight lacing and the wearing of tight bands or belts are etiological factors. Pressure is exerted along the lower border of the ribs and we have the additional tendency to continuously force the intestines downward, in fact, with the result of stretching the suspensory ligaments and with the production of *enteroptosis*, thus weakening one of the main supports of the kidneys. Gastropotosis of varying degree then follows the enteroptosis and we have resulting gastrointestinal and nervous symptoms. The nephroptosis is only part of the general condition.

Improper support after confinement, may cause lax abdominal walls and decreasing abdominal pressure, with results similar to the above.

Loss of flesh, by bearing children in rapid succession, may cause absorption of the fatty capsule of the kidney, but what is equally important, absorption of intra-abdominal fat with decreased intra-abdominal pressure. Enteroptosis, nephroptosis and gastropotosis result.

Anything, therefore, or any disease which may cause absorption of fat, may be an etiological factor.

In other words, I do not believe that the fatty capsule of the kidney is alone *especially selected for absorption*.

The resulting ptosis of the gastro-intestinal tract may be of severe type, such as described by Glénard, with aggravated nervous symptoms and frequently with prolapse of both kidneys; or the ptosis may be slight and with moderate symptoms; in fact, some cases exist with no symptoms whatsoever.

Thus, in some of my cases at Wards Island, on percussion and palpation, nephroptosis of the right kidney was found, no *enteroptosis was apparent*; yet on careful examination, by the various methods of inflation of the stomach and what is most satisfactory, by transillumination of the stomach with fluorescëin solution, gastroptosis of varying and often slight degree was demonstrated in every case. When this is found we know that enteroptosis exists.

You must remember that it is not the degree of the descent of the lower border of the stomach that constitutes a gastroptosis but that the lesser curvature descends with the greater, while in a dilated stomach, the lesser curvature maintains its relation to the diaphragm.

Atony, hyperacidity, anacidity, or achylia gastrica were found in these cases. The bowels were irregular.

I have about fifteen of these patients at present under observation. In addition, I have some cases of chronic gastritis with dilatation of the stomach, with evidently congenital wandering kidney and with no symptoms pointing to this organ.

We thus readily account, by reason of the ptosis of the stomach and intestines, for the gastro-intestinal symptoms, jaundice, colitis, congestion of the pelvic organs, and tendency to chronic appendicitis and also for the emaciation and tendency to invalidism.

In a large percentage of these cases, I fail to see that the nephroptosis has any relations whatsoever to the patient's condition.

Treatment.—In all cases of nephroptosis, therefore, a careful investigation into the gastro-intestinal tract is necessary, since in a large percentage of cases it is simply a part of a general ptosis.

The stomach and intestines should receive appropriate treatment. Rest in bed with fattening treatment, is one method to employ.

The increase of *intra-abdominal tension* by putting on fat and by *proper mechanical support* are the main objects.

The prolapsed kidney is held in place by the intestines and the intestines are pushed upward and backward by the belt, which exerts pressure from the symphysis to just below the umbilicus.

On this principle one can use the Van Valzah-Hayes bandage, the Gallant corset, or a belt made by Stohlmann & Pfarre, of New York.

I have secured excellent results with the Rose belt, which I have modified, by using adhesive plaster on moleskin (Johnson & Johnson), which is the least irritating form of plaster.

Personally, I allow the patient to be about, employ mechanical support, dietetics, appropriate medication to each case, and endeavor to put on fat.

I have already given you the indications for nephropexy. Even its most ardent advocates, frequently employ support for a long period after operation and endeavor to fatten the patient. Unfortunately they *neglect* a careful investigation into the gastrointestinal conditions as I have already demonstrated to you.

In *conclusion*, let me say that nephropexy, like all operative procedures, has its limitations and these I have endeavored to define, as far as lies in my power.

The percentage of cases upon whom it is necessary to operate, I believe to be comparatively small, and I must earnestly protest against promiscuous and therefore unscientific surgical procedures.

EDITORIAL

THE SURGICAL TREATMENT OF TUBERCULOSIS OF THE TESTICLE.

THE various local treatments which have been advised in tuberculosis of the testicle are numerous; employed successfully by some, objections and failures have been found by others. Injections made directly into the tuberculous nodules have been tried, Michaux particularly recommending camphorated naphthol, but since the researches of Guinard, it has been shown that this antiseptic may produce very severe accidents. Cauterization with the thermocautery is defective inasmuch as it produces persistent fistulae and at the same time, is always an incomplete operation. The same may be said of excision of the foci in the epididymis, while other foci of tuberculosis when removed, always leave behind minute lesions which will undergo their evolution later. The tuberculous process has certainly a predilection for the epididymis, the testicle itself being frequently free from disease, but this is not an absolute rule, because the seminal gland may often be involved and it is for this reason that epididymectomy is not infrequently insufficient for a radical cure.

For some time the operation of choice has appeared to be castration, but this is far from always being crowned by success. A tubercular fistula coming from the vas deferens may result, and what is still more, castration has no action on the prostatic lesions and in no way prevents the remaining testicle from becoming diseased in its turn. For this reason castration should only be resorted to in desperate cases, because one is never sure that the other testicle may not become involved, in which case castration becomes a very dangerous operation on account of the general nervous and organic disturbances that it brings about, the apparition of which should be attributed to the suppression of the internal testicular secretion.

There is another reason which pleads against castration, namely the great opposition shown by patients. A man always

wants to retain these organs and as soon as their removal is proposed, he frequently changes his physician. Then again, in order that castration shall be a complete operation, the removal of the vas deferens, prostate and seminal vesicles, which are always considerably involved in the tuberculous process, is necessary and this very complex operation offers considerable gravity.

Quite recently Mauclaire has tried a new conservative method, consisting in ligating separately, or *en masse*, all the elements of the cord, hoping to produce atrophy of the epididymis. According to this authority, gangrene of the testicle will never occur when the technique followed is absolutely aseptic. Ligature with or without section of the cord is especially indicated in cases of tuberculosis which have not gone as far as suppuration; atrophy of the testicle and retrogression of the lesion are very much slower when the tuberculous process has suppurated.

This method appears to offer certain advantages; it is easy to execute and leaves behind a testicular débris which morally satisfies the patient. Occasionally even, the therapeutic action of the ligature extends to the seminal vesicles and the prostate, the tuberculous lesions seated in these organs undergoing a marked retrogression. To this surgical treatment, however, like in any other, one should always institute a general medical treatment in order to improve the general condition and strength of the patient, so that the organism will be able to cope with the specific bacillus and prevent its generalization. It is evident that more experience is necessary before approving or condemning ligature of the cord in these cases, but it would seem at all events that the operation is devoid of risk and in no way would prevent a more radical operation being attempted should it prove a failure.